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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/975,834	10/11/2001	Sang Kyeong Yun	2598/1G196US1	2710

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EXAMINER	
TUGBANG, ANTHONY D	
ART UNIT	**PAPER NUMBER**
3729	

DATE MAILED: 04/07/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	09/975,834	YUN ET AL.	
	Examiner	Art Unit	
	A. Dexter Tugbang	3729	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *22 January 2004*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *20-57 and 59-61* is/are pending in the application.

4a) Of the above claim(s) *20-38* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *38-57 and 59-61* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☒ Certified copies of the priority documents have been received in Application No. 09/417,415.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Election/Restrictions

1. Applicant's election of Species C, Claims 39-57 and 59-61 in Paper No. 3 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been treated as an election without traverse (MPEP § 818.03(a)).

2. Claims 20-38 have been withdrawn from further consideration pursuant to 37 CFR 1.142(b) as being drawn to a nonelected invention, there being no allowable generic or linking claim. Election was made **without** traverse in Paper No. 4.

Claim Objections

3. Claims 39 and 53 are objected to because of the following informalities.

In Claim 39, the term "its" (line 4) should be deleted.

In Claim 53, the phrase of "a base" (line 2) should be replaced with --the base--.

Appropriate correction is required.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter, which the applicant regards as his invention.

5. Claims 39-57 and 59-61 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

In Claim 39, the phrase of "said ultrafine ceramic powder" (line 8) lacks positive antecedent basis.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

7. Claims 39-42, 44-51, 53, 55-57 and 59-61 are rejected under 35 U.S.C. 102(b) as being anticipated by Chida et al 5,064,596.

Regarding Claim(s) 39, Chida discloses the final structure including compositions comprising of: a ceramic oxide powder with a grain size of 1 μm with lead (Pb) and titanium (Ti) as basic constituents (see col. 3, lines 3-12 and lines 40-44); a ceramic sol solution (see col. 3, lines 20-26); a suspension including an organic dispersive medium (binder discussed at col. 4, lines 10+) to produce a piezoelectric/electrostrictive thin film substance of a green body or substrate.

It is noted that the patentability of a product does not depend on its method of production. If the product in the product-by-process claims above are the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process." *In re Thorpe*, 777 F.2d 695, 698, 227 USPQ 964, 966 (Fed. Cir. 1985).

For example in Claim 39, the limitations of "a non-explosive...500°C" (lines 2-3) as well as steps E and F of "producing...together" (lines 12-16) have not been given any patentable

weight as these limitations do not patentably further limit the claimed product. The resulting final structure of the piezoelectric/electrostrictive film need not be made by any dipping or electrophoretic deposition and with the solvent being removed, the solvent is not even part of the final product.

Regarding Claim(s) 40-42, 48, 57 and 59-61, the limitations directed to the process steps involving thermally treating and drying at specific temperatures have not been given any patentable weight as the final resulting structure of the product does depend upon these process steps and does not patentably further limit the claimed product.

Regarding Claim(s) 44-47, the claimed "substrate", which is read as the green body or thin green sheet of Chida (see col. 3, lines 40+), is made of ceramics which can include components of either silicon or zirconia (see col. 3, line 6). With the material of the substrate in Claim 44 being made of ceramics, the limitations in each of Claims 45 and 46 have not been given any patentable weight because Claim 45 and 46 are directed to the metal and organic compound and fail to further limit the ceramics in Claim 44.

Regarding Claim(s) 48-50 as best understood, Chida further teaches that the ceramic oxide powder includes lead, zirconium and titanium and at least one more element of barium (see col. 3, lines 5-12). The ceramic oxide powder of Chida is inherently PZT.

Regarding Claim(s) 51 and 53, the claimed "organic dispersion medium" can include alcohols (see col. 5, lines 30-35) in which these alcohols are part of the organic solvent, which is part of the ceramic sol solution.

Regarding Claim(s) 55 and 56, Chida further teaches that the thickness of the piezoelectric/electrostrictive film is 5-10 μm (see col. 3, lines 40-43).

Claim Rejections - 35 USC § 103

8. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

9. Claims 52 and 54 rejected under 35 U.S.C. 103(a) as being unpatentable over Chida et al.

The number of parts of the content of either the organic dispersant or ceramic sol solution are each considered to be an effective variable required for the composition of the final structure of the product. It would have been obvious to one having ordinary skill in the art at the time the invention was made to have provided Chida with an amount of parts of the content of either the organic dispersant or ceramic sol solution as specifically recited in each of Claims 52 and 54, since it has been held that discovering an optimum value of a result effective variable involves only routine skill in the art. *In re Boesch*, 617 F.2d 272, 205 USPQ 215 (CCPA 1980).

10. Claim 43 is rejected under 35 U.S.C. 103(a) as being unpatentable over Chida et al in view of Burrow et al 5,585,136.

Chida discloses the product of a piezoelectric/electrostrictive film as relied upon above in Claim 39. Chida does not teach that the particle size of the ceramic oxide powder is within the range of 0.01-0.1 μm.

Burrow teaches particle sizes of ceramic powders being at least 0.1 μm to provide uniform stable dispersions (see col. 4, lines 2+). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have provided Chida with the particle size of of Burrow, to provide the structure of the product with a uniform stable dispersion.

Conclusion

11. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

12. Any inquiry concerning this communication or earlier communications from the examiner should be directed to A. Dexter Tugbang whose telephone number is 703-308-7599. The examiner can normally be reached on Monday - Friday 7:00 am - 3:30 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Peter Vo can be reached on 703-308-1789. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

A. Dexter Tugbang
Primary Examiner
Art Unit 3729

March 31, 2004